

SAF-RC-030
Remaining Sites Confirmation Sampling -
Other Solid
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02

mx 04/05/06
INITIAL/DATE

COMMENTS:

SDG J00041

SAF-RC-030

Waste Site: 100-D-66

RECEIVED
APR 24 2006
EDMC

Date: 22 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Soil - Waste Site
100-D-66
Subject: Wet Chemistry - Data Package No. J00041-ST

INTRODUCTION

This memo presents the results of data validation on Data Package No. J00041 prepared by Severn Trent (ST). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10VK1	1/9/06	Solid	C	See note 1
J10VK2	1/9/06	Solid	C	See note 1

1 – Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

• Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Solid samples must be analyzed within 24 hours for chromium VI.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

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- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits (54% & 33%), all chromium VI results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample

and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to a matrix spike/matrix spike duplicate RPD outside QC limits, all chromium VI results were qualified as estimates and flagged "J".

Field Duplicate

One set of field duplicates (J10VK1/J10VK2) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package J00041 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to matrix spike recoveries outside QC limits (54% & 33%), all chromium VI results were qualified as estimates and flagged "J". Due to a matrix spike/matrix spike duplicate RPD outside QC limits, all chromium VI results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1
Glossary of Data Reporting Qualifiers

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Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

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WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: J00041	REVIEWER: TLI	Project: 100-D-66	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	All	MS recovery
All	J	All	RPD

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD						
Lab: ST		SDG: J00041				
Sample Number		J10VK1		J10VK2		
Remarks		Duplicate				
Sample Date		1/9/06		1/9/06		
Wet Chemistry		RQL	Result	Q	Result	Q
Chromium VI		0.5	0.350	U	0.350	U

000010

FORM I
SAMPLE RESULTS

Date: 24-Jan-06

Lab Name: STL Richland

SDG: J00041

Collection Date: 1/9/2006 9:15:00 AM

Lot-Sample No.: J6A090208-1

Report No.: 31185

Received Date: 1/9/2006 2:45:00 PM

Client Sample ID: J10VK1

COC No.: RC-030-042

Matrix: SOLID

Ordered by Client Sample ID, Batch No.

Parameter	Result	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncrt	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6010446	7196_CR6			Work Order: HVA3M1AA		Report DB ID: 9HVA3M10					
HEXCHROME	3.50E-01 U J		0.0E+00	3.50E-01	mg/kg	N/A	(1.)	1/10/06		2.5	
						3.50E-01	N/A			G	

No. of Results: 1

Comments:

12
3/20/06

000011

STL Richland

rptSTLRchSample
V4.14.4 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I SAMPLE RESULTS

Date: 24-Jan-06

Lab Name: STL Richland

SDG: J00041

Collection Date: 1/9/2006 9:15:00 AM

Lot-Sample No.: J6A090208-2

Report No.: 31185

Received Date: 1/9/2006 2:45:00 PM

Client Sample ID: J10VK2

COC No.: RC-030-042

Matrix: SOLID

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6010446	7196_CR6				Work Order: HVA3W1AA		Report DB ID: 9HVA3W10					
HEXCHROME	3.50E-01	U J		0.0E+00	3.50E-01	mg/kg	N/A	(1.)	1/10/06		2.5	
							3.50E-01	N/A			G	

No. of Results: 1

Comments:

Handwritten:
3/20/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Certificate of Analysis

Washington Closure Hanford
3190 George Washington Way
Richland, WA 99354

January 24, 2005

Attention: Joan Kessner

SAF Number	:	RC-030
Date SDG Closed	:	January 9, 2006
Number of Samples	:	Two (2)
Sample Type	:	Other Solids
SDG Number	:	J00041
Data Deliverable	:	15-Day / Summary

CASE NARRATIVE

I. Introduction

On January 9, 2006, two water samples were received at STL Richland (STLR) for chemistry analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

<u>WCH ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
J10VK1	HVA3M	OTHER SOLID	01/9/06
J10VK2	HVA3W	OTHER SOLID	01/9/06

II. Sample Receipt

The sample was received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors. The requested analyses were:

Chemical Analysis
Hexavalent Chromium by EPA method 7196A

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IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis

Hexavalent Chromium by EPA method 7196A:

The sample matrix spike, matrix duplicate and post digestion spike for this analysis were all below acceptance limits indicating a possible matrix interference. Other than as noted, the LCS, batch blank, sample, sample matrix spikes (J10VK1) and sample duplicate (J10VK1) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:



Hans Carman
Project Manager

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Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-030-042		Page 1 of 1	
Collector STANKOVICH/HUDSON		Company Contact Mike Stankovich		Telephone No. 531-7620		Project Coordinator KESSNER, JH		Price Code 9C Data Turnaround 15 Days	
Project Designation Remaining Sites Confirmation Sampling - Other Solid		Sampling Location 100-D-14 66		SAF No. RC-030		Air Quality <input type="checkbox"/>			
Ice Chest No.		Field Logbook No. EL-1578-9		COA C10DR16700		Method of Shipment Hand Delivered/Gov't Vehicle			
Shipped To Severn Trent Incorporated, Richland		Offsite Property No.		Bill of Lading/Air Bill No.					
POSSIBLE SAMPLE HAZARDS/REMARKS J000 41 Special Handling and/or Storage J6A090208 4 Dec 01 25 06 SXS1/10/06		Preservation		Cool 4C					
		Type of Container		G/P					
		No. of Container(s)		1					
		Volume		60mL					
		Chromium Max - 7196							
SAMPLE ANALYSIS									
Sample No.	Matrix *	Sample Date	Sample Time						
J10VK9	OTHER SOLID	8/1/06							
J10VK0	OTHER SOLID	8/1/06							
J10VK1 HVA3M	OTHER SOLID	1-9-06	0915	X					
J10VK2 HVA3W	OTHER SOLID	1-9-06	0915	X					
CHAIN OF POSSESSION									
Relinquished By/Removed From		Date/Time		Sign/Print Names		SPECIAL INSTRUCTIONS			
Bill Hudson		1/9/06		Jeff Jensen		10.5°C			
Relinquished By/Removed From		Date/Time		Received By/Stored In					
Relinquished By/Removed From		Date/Time		Received By/Stored In					
Relinquished By/Removed From		Date/Time		Received By/Stored In					
Relinquished By/Removed From		Date/Time		Received By/Stored In					
Relinquished By/Removed From		Date/Time		Received By/Stored In					
Relinquished By/Removed From		Date/Time		Received By/Stored In					
Relinquished By/Removed From		Date/Time		Received By/Stored In					
LABORATORY SECTION		Received By		Title		Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

Clouseau Nonconformance Memo

SEVERN
TRENT
SERVICES

NCM #: 10-07308	Classification: Anomaly
NCM Initiated By: Debbie Manis	Status: GLREVIEW
Date Opened: 01/11/2006	Production Area: Classical Chemistry
Date Closed:	Tests: 7196A
	Lot #'s (Sample #'s): J6A090208 (1,2), J6A100000 (446),
	QC Batches: 6010446
Nonconformance: Other (describe in detail)	
Subcategory: Other (explanation required)	

Problem Description / Root Cause

Name	Date	Description
Debbie Manis	01/11/2006	MS, MSD are below the acceptable limit. Matrix interference, reducing agent present.

Corrective Action

Name	Date	Corrective Action
Debbie Manis	01/11/2006	A PDMS analyzed also had a low recovery. Data reported.

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note
			<u>Response</u>		<u>Response Note</u>

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

Appendix 5
Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-66		DATA PACKAGE: K0170		
VALIDATOR:	TLI	LAB:	ST	DATE: 3/24/66	
			SDG:	K0170	
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO ₃ /NO ₂
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MATRIX					
J10UK1 J10UK2					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? Yes **No** N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? Yes No **N/A**Initial calibrations acceptable? Yes No **N/A**ICV and CCV checks performed on all instruments? Yes No **N/A**ICV and CCV checks acceptable? Yes No **N/A**Standards traceable? Yes No **N/A**Standards expired? Yes No **N/A**Calculation check acceptable? Yes No **N/A**

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) Yes No N/A

ICB and CCB results acceptable? (Levels D, E) Yes No N/A

Laboratory blanks analyzed? Yes No N/A

Laboratory blank results acceptable? Yes No N/A

Field blanks analyzed? (Levels C, D, E) Yes No N/A

Field blank results acceptable? (Levels C, D, E) Yes No N/A

Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

Sike standards NIST traceable? (Levels D, E) Yes No N/A

Spike standards expired? (Levels D, E) Yes No N/A

LCS/BSS samples analyzed? Yes No N/A

LCS/BSS results acceptable? Yes No N/A

Standards traceable? (Levels D, E) Yes No N/A

Standards expired? (Levels D, E) Yes No N/A

Transcription/calculation errors? (Levels D, E) Yes No N/A

Performance audit sample(s) analyzed? Yes No N/A

Performance audit sample results acceptable? Yes No N/A

Comments: MS- 54 + 3370 - J all no PAs

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ☒ Yes ☐ No ☐ N/A

Duplicate results acceptable? ☒ Yes ☐ No ☐ N/A

MS/MSD standards NIST traceable? (Levels D, E) ☒ Yes ☐ No ☐ N/A

MS/MSD standards expired? (Levels D, E) ☐ Yes ☐ No ☒ N/A

Field duplicate RPD values acceptable? ☒ Yes ☐ No ☐ N/A

Field split RPD values acceptable? ☐ Yes ☐ No ☒ N/A

Transcription/calculation errors? (Levels D, E) ☐ Yes ☐ No ☒ N/A

Comments: 4870 RPD - 5 ul

6. HOLDING TIMES (all levels)

Samples properly preserved? ☒ Yes ☐ No ☐ N/A

Sample holding times acceptable? ☒ Yes ☐ No ☐ N/A

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?..... ☒ Yes No ☒ N/A

Results supported in the raw data? (Levels D, E)..... Yes ☒ No ☒ N/A

Samples properly prepared? (Levels D, E)..... ☒ Yes No ☒ N/A

Detection limits meet RDL?..... ☒ Yes No ☒ N/A

Transcription/calculation errors? (Levels D, E) Yes No ☒ N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

FORM II

Date: 24-Jan-06

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: J00041

Collection Date: 1/9/2006 9:15:00 AM

Lot-Sample No.: J6A090208-1

Report No.: 31185

Received Date: 1/9/2006 2:45:00 PM

Client Sample ID: J10VK1

COC No.: RC-030-042

Matrix: SOLID

Parameter	Remit, Orig Rat	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6010446	7196_CR6				Work Order: HVA3M1AE			Report DB ID: HVA3M1ER		Orig Sa DB ID: SHVA3M10		
HEXCHROME	3.50E-01	U		0.0E+00	3.50E-01	mg/kg	N/A	(1.)	1/10/06		25	
	3.50E-01	U		RPD 0.0		3.50E-01		N/A			G	

No. of Results: 1 Comments:

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STL Richland

RPD - Relative Percent Difference.

rptSTLRchDupV4.1
4.4 A97

MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II
BLANK RESULTS

Date: 24-Jan-06

Lab Name: STL Richland

SDG: J00041

Matrix: SOLID

Report No. : 31185

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA ,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6010446	7196_CR6				Work Order: HVEC61AA	Report DB ID: HVEC61AB						
HEXCHROME	3.50E-01	U		0.0E+00	3.50E-01	mg/kg	N/A	(1.)	1/10/06		2.5	
						3.50E-01		N/A			G	
No. of Results: 1 Comments:												

STL Richland
rptSTLRchBlank
V4.14.4 A97MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II
LCS RESULTS

Date: 24-Jan-06

Lab Name: STL Richland

SDG: J00041

Matrix: SOLID

Report No. : 31185

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 6010446	7198_CR8					Work Order: HVEC61AC		Report DB ID: HVEC61AS					
HEXCHROME	4.08E+01			0.0E+00	3.50E-01	mg/kg	N/A	4.00E+01		102%	1/10/06	2.5	
							Rec Limits:	80	120	0.0		G	
No. of Results: 1	Comments:												

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rpSTLRchLcs
V4.14.4 A97

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FORM II

Date: 24-Jan-06

MATRIX SPIKE RESULTS

Lab Name: STL Richland

SDG: J00041

Lot-Sample No.: J6A090208-1

Report No.: 31185

Matrix: SOLID

Parameter	Spike Result, Orig Rat	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 6010446	Work Order: HVA3M1AC			Report DB ID: HVA3M1CW		Orig Sa DB ID: 9HVA3M10							
HEXCHROME	2.46E+01			0.0E+00	3.50E-01	mg/kg	N/A	53.95%	4.56E+01		1/10/06	2.5	7196_CR6
	3.50E-01											G	
Batch: 6010446	Work Order: HVA3M1AD			Report DB ID: HVA3M1DW		Orig Sa DB ID: HVA3M1CW							
HEXCHROME	1.50E+01			0.0E+00	3.50E-01	mg/kg	N/A	33.12%	4.54E+01		1/10/06	2.5	7196_CR6
	2.46E+01											G	

Number of Results: 2

Comments:

000027

STL Richland RER - Replicate Error Ratio = $(S-D)/[\sqrt{(sq(TPUs)+sq(TPUD))}]$ as defined by ICPT BOA.
 rpt\$TLRchMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 V4.14.4 A97

FORM II

Date: 24-Jan-06

MATRIX SPIKE DUPLICATE RESULTS

Lab Name: STL Richland

SDG: J00041

Lot-Sample No.: J6A090208-1

Report No.: 31185

Matrix: SOLID

Parameter	Spike/Result, Orig Rat	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 6010446	7196_CR6				Work Order: HVA3M1AC	Report DB ID: HVA3M1CW				Orig Sa DB ID: HVA3M1DW			
HEXCHROME	2.46E+01			0.0E+00	3.50E-01	mg/kg	N/A	53.95%	4.56E+01		1/10/06	25	
	1.50E+01	RPD	48.3									G	
Batch: 6010446	7196_CR6				Work Order: HVA3M1AD	Report DB ID: HVA3M1DW				Orig Sa DB ID: HVA3M1CW			
HEXCHROME	1.50E+01			0.0E+00	3.50E-01	mg/kg	N/A	33.12%	4.54E+01		1/10/06	25	
	2.46E+01	RPD	48.3									G	
No. of Results: 2 Comments:													

STL Richland RER - Replicate Error Ratio = $(S-D)/[\sqrt{(sq(TPU_s)+sq(TPU_d))}]$ as defined by ICPT BOA.
 rptSTLRchMsDup2 Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 V4.14.4 A97